

9.

$$\int \frac{1}{(1-x)^2} dx = \int (1-x)^{-2} dx$$

$$u = 1-x$$

$$du = -1 dx$$

$$-du = dx$$

$$= \int u^{-2} \cdot -du$$

$$= -1 \int u^{-2} du$$

$$= \cancel{-1} \frac{u^{-1}}{\cancel{-1}} + C$$

$$y = \frac{1}{u} + C$$

$$y = \frac{1}{1-x} + C$$

10.  $\int \sec^2(x+2) dx = \int \sec^2 u du$

$$u = x+2$$

$$du = dx$$

$$y = \tan u + C$$

$$y = \tan(x+2) + C$$

$$\int \sqrt{\tan x} \sec^2 x dx = \int (\tan x)^{\frac{1}{2}} \boxed{\sec^2 x dx}$$

$$u = \tan x$$

$$du = \sec^2 x dx$$

$$= \int u^{1/2} \boxed{du}$$

$$= \frac{2}{3} u^{3/2} + C$$

$$y = \frac{2}{3} (\tan x)^{3/2} + C$$

$$19. \int \underline{s}^{1/3} \cos(s^{4/3} - 8) \underline{ds} =$$

$$u = s^{4/3} - 8$$

$$= \int \cos(u) \cdot \frac{3}{4} du$$

$$du = \frac{4}{3} s^{1/3} ds$$

$$= \frac{3}{4} \int \cos u du$$

$$\frac{3}{4} du = s^{1/3} ds$$

$$y = \frac{3}{4} \sin u + C$$

$$y = \frac{3}{4} \sin(s^{4/3} - 8) + C$$

$$20 \int \frac{dx}{\sin^2 3x} = \int \frac{1}{\sin^2 3x} dx$$

$$u = 3x$$

$$du = 3dx$$

$$\frac{du}{3} = dx$$

$$\int \underline{\csc^2 3x} dx$$

$$\int \csc^2 u \cdot \frac{du}{3}$$

$$\frac{1}{3} \int \csc^2 u du$$

$$Y = -\frac{1}{3} \cot 3x + C$$